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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,056	07/30/2003	Joseph W. Kormuth	NSD2002-012	8187

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EXAMINER

PALABRICA, RICARDO J

ART UNIT PAPER NUMBER

3641

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/630,056

Applicant(s)

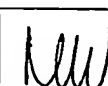
KORMUTH ET AL.

Examiner

Rick Palabrica

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/30/03</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim1 recites the limitation, "after adding at least a portion of the decontamination reagent, degassing the RCS to remove hydrogen gas and then adding an oxidant to oxidize the residual dissolvent hydrogen and decontamination reagent in the reactor coolant." There is neither an adequate description nor enabling disclosure as to what is encompassed by the term, "at least a portion of the decontamination agent." Underlining provided. The term "portion" means a part of the whole and said part can be any fraction of the whole. The claims do not limit the reagent addition process to any particular manner, and either continuous and batch addition reads on the claim language.

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There is no support as to which specific part of the process is being referred to for either in a continuous or batch reagent addition.

2. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete as to what is encompassed by the term, "at least a portion of the decontamination reagent." Thus, the metes and bounds of the claims cannot be determined because no criterion is provided for determining which portion of reagent addition is being claimed for either batch or continuous addition.

Claim 1 recites the limitations "the residual dissolved hydrogen" and "the gamma emitting activity" in the last three lines of the claim. There are insufficient antecedent bases for these limitations in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Wood et al. (U.S. 5,901,368), who disclose a method of decontaminating water-

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cooled reactors, which include pressurized water reactors. Their process is applied after shutdown of the reactor system (see col. 3, lines 22+). Their shutdown expedient inherently cools the reactor coolant because the fission process, which generates heat, is terminated at shutdown.

Wood et al.'s process is applied with either a LOMI (see col. 4, lines 40+) or CAN-DEREM (see col. 4, lines 63+) decontamination reagent, either one of which inherently include a reducing agent or chelant. (Examiner's note: LOMI includes vanadous picolinate (e.g. see col. 7, lines 12+) and CAN-DEREM includes EDTA). They disclose circulation of the reactor coolant containing the decontamination agent (see col. 8, lines 48+). The reactor coolant is circulated through a cation exchange resin cleanup system (see col. 8, lines 50+), which removes complexed iron and nickel from the coolant.

As to the addition of boron to the reactor coolant, this is inherent in the Wood et al. process where the chemical and volume control system (CVCS) is part of decontamination set-up(see column 8, lines 13+). The CVCS maintains control of the boron concentration in the coolant. The claim language "adding boron to the reactor coolant" reads on Wood et al.'s expedient for re-introduction of boron into the RCS when the CVCS returns the processed coolant back to the RCS.

As to the step of degassing the RCS, Wood et al. disclose gas dis-entrainment as part of their process (see col. 7, lines 55+). This step inherently removes gas from the reactor coolant system.

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As to the addition of an oxidant, Wood et al. disclose the addition of formic acid or nitrous oxide at different times during decontamination (see col. 6, lines 65+). Wood et al.'s process therefore allows for addition of such oxidant following degassing of the system.

As to the step of reducing the gamma emitting activity in the coolant, this is inherent in the Wood et al. process. Their decontamination process reduces the radioactivity of the coolant, including the activity of gamma emitting isotopes therein.

As to the temperature limitations in claims 2 and 3, Wood et al. incorporates by reference Wood et al. (U.S. 4,705,573) that disclose the use of LOMI reagents at a temperature from ambient to 200°C, preferably in the range of 60°C to 95°C, which temperature ranges anticipate the claims.

As to the removal of complexed iron and nickel Wood et al. (U.S. 4,705,573) also specifically disclose such removal because these elements are part of the construction materials, e.g., stainless steel, that are decontaminated using the LOMI reagent (e.g. see Example 3 and Table 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. ('368) in view of Corpora et al. (U.S. 5,517,539). Woods et al. ('368) disclose the applicant's claim except for the step of removing lithium along with the complexed iron.

Corpora et al. teaches a method of decontaminating a primary loop of a pressurized water reactor using CAN-DEREM or LOMI reagents (see col. 2, lines 44+). They teach that the reactor coolant system of PWRs normally contains boron and lithium (see col. 1, lines 15+). They teach that boron (and for that matter, lithium) tends to buffer the decontamination reagents and require additional amounts of decontamination reagents (col. 2, lines 57+).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, as disclosed by Woods et al. ('368), by the teaching of Corpora et al., to remove lithium along with the complexed iron, to gain the advantage thereof (i.e., reduce buffering of the decontamination agent and reduce cost), because such modification is no more than the use of a well-known expedient within the decontamination art.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. ('368) in view of Murray et al. (U.S. 4,729,855). Woods et al. ('368) disclose the applicant's claim except for the use of hydrogen peroxide as the oxidant.

Murray et al. teach a method of decontaminating radioactive metal surfaces of nuclear reactors, including PWRs (see col. 2, lines 59+). They teach

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that when the decontamination solution must be disposed of, it is mixed with an oxidizing agent, and hydrogen peroxide is preferable for this purpose because it is readily available, inexpensive and produces a minimum amount of solids (see col. 3, lines 8+).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, as disclosed by Woods et al. ('368), by the teaching of Murray et al., to use hydrogen peroxide as the oxidizing agent, to gain the advantage thereof (i.e., less expensive), because such modification is no more than the use of a well-known expedient within the decontamination art and the substitution of one oxidant by another well-known oxidant.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. ('368). As to the limitation in the claim regarding the activity level, this is a matter of optimization within prior art conditions or through routine experimentation (see MPEP 2144.05 II.A).

Reducing the gamma activity of the coolant by increasing the decontamination period is advantageous because it reduces worker exposure. However, the reactor cannot operate and the plant cannot generate power while it is being decontaminated. Thus, the appropriate level of gamma activity of the coolant involves a balancing (optimization) of costs associated with worker protection and loss of plant revenue.

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6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. ('368) in view of the combination of Schlonski et al. (U.S. 5,089,216) and Bradbury et al. (U.S. 4,470,951). Woods et al. ('368) disclose the applicant's claim except for the use of the residual heat removal system (RHRS) for removing dissolved oxygen.

Schlonski et al. teach a method of chemical decontamination of nuclear reactor systems using LOMI or CAN-DEREM reagents. They teach that it is advantageous to integrate the RHRS into the decontamination process to allow large scale, full system decontamination (see col. 1, lines 65+).

Bradbury et al. teach that LOMI reagents are sensitive to oxygen (see col. 2, lines 16+). Removal of oxygen from the reactor coolant prior to introduction of a decontamination agent therefore enhances the latter's effectiveness.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, as disclosed by Woods et al. ('368), by the teaching of the Schlonski et al. – Bradbury et al. combination, to use the RHRS to remove dissolved oxygen from the coolant before introducing a decontamination reagent, to gain the advantages thereof (i.e., large scale use and more effective decontamination), because such modification is no more than the use of a well-known expedient within the decontamination art.

7. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. ('368) in view of Petersen et al. (U.S. 4,952,449). Woods et al.

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('368) disclose the applicant's claim except for the use of zinc in addition to the decontamination reagent.

Petersen et al. teach addition of zinc oxide to prevent deposition of radioactive cobalt, a major source of radiation exposure of workers, and/or inhibit intergranular stress corrosion cracking in water-cooled reactors (see col. 1, lines 11+). Applicant himself cites two references on zinc addition for the dual purpose of exposure reduction and stress corrosion mitigation (see specification, p. 4).

One having ordinary skill in the art would have recognized that both references are in the same field of endeavor, i.e., reduction of worker exposure. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, as disclosed by Woods et al. ('368), by the teaching of Petersen et al., to add zinc to the coolant, in addition to the decontamination reagent and oxidant, to gain the advantages thereof (i.e., further reduce worker exposure), because such modification is no more than the use of a well-known expedient within the nuclear art.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References F and G further illustrate prior art.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 703-306-5756. The examiner can normally be reached on 6:30-5:00, Mon-Thurs.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Carone can be reached on 703-306-4198. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJP
October 12, 2004

A handwritten signature in black ink, appearing to read "Mike Carone", is located in the lower right quadrant of the page.